

Sempervirens

Summer 2018 The Quarterly of the Virginia Native Plant Society

2018 Annual Meeting Set for Sept. 14–16

Register now for Williamsburg gathering

Article by Cortney Will, John Clayton Chapter

Whe members of the John Clayton Chapter are excited to be hosting this year's annual meeting, "Sustaining Nature, Sustaining Ourselves," over the weekend of Sept. 14–16 at the William & Mary School of Education in Williamsburg.

We have arranged roughly a dozen options for field trips and plant walks, in addition to excellent food and innovative speakers. Walks will offer a diversity of habitats and local features, including tidal salt marshes, hardwood forests, cypress swamps, vernal pools, and the William & Mary herbarium, greenhouse, and College Woods. Lest we forget Williamsburg's incredible history, we are also featuring a walk in Colonial Williamsburg, which leader Phillip Merritt notes is basically "a 300-acre botanical garden." (Field trips, p. 3)



Among the plants that participants might encounter in Williamsburg is the Smooth Yellow False Foxglove (*Aureolaria flava*). (John Clayton Chapter photo)

The conference opens Friday evening with an interactive presentation by the nonprofit Virginia Center for Inclusive Communities (VCIC). The center's work has its roots in the 1930s, when it was organized as a grassroots movement responding to religious intolerance. It has evolved and expanded in the intervening 80 years, and today the center provides programming that helps Virginia's schools, businesses, and communities achieve success through inclusion. We will welcome Jessica Hawthorne, director of programs, who designs and facilitates VCIC's assemblies, one-day youth forums, and multiday retreats for middle school, high school, and college students across the state.

On Saturday we look forward to hearing keynote speaker Kevin Bryan, senior policy director at the Keystone Policy Center in Washington, D.C. Kevin is a passionate, accomplished leader with extensive experience in the development of organizational strategies and structures designed to address issues pertaining to a range of environmental, energy, and conservation issues. Kevin leads Keystone's environment, energy, and climate practice area. He also provides strategic direction and leadership for the Next 100 Coalition, a group of civil rights,



Jessica Hawthorne Kevin Bryan

environmental justice, and grassroots conservation organizations that pursue a shared vision of a more diverse and inclusive culture in managing and preserving the nation's public lands.

While the conference formally begins on Friday night, we're hoping you'll join us beforehand for dinner at the Corner Pocket before the program. Located not far from meeting headquarters, the restaurant is owned by longtime VNPS member Lynn Allison, who has graciously agreed to host as many of us as can make it.

The Annual Meeting is generously supported by William & Mary's Committee on Sustainability, which this year awarded the John Clayton Chapter a Green Fee Grant to sponsor William & Mary students at the conference and to highlight sustainability efforts on campus.

More information and registration can be found at vnps.org. We expect the sweltering summer temperatures will have cooled off in September, with highs in the 80s and lows in the 60s, making for (fingers crossed) an excellent weekend. We can't wait to see you! ❖



From the President

Membership brings floristic opportunities

One of the benefits of membership in our Society is the opportunity to visit areas of great floristic interest and biodiversity in the company of experts. So far this year I have taken advantage of two such opportunities that I am excited to share with you.

Harry and I were fortunate to participate in the Celebrate The



Misty morning walk along a section of the Appalachian Trail.

Cedars event in early May. Rob Evans, natural areas protection manager with the Virginia Natural Heritage Program, arranged a fabulous public event, and a number of our members drove to the farthest reaches of the commonwealth to participate. Did you know that Lee County, Virginia, is farther west than Detroit? Caitie Cyrus, one of our website administrators and a Facebook guru, wrote a blog about the trip for our website and I recommend it to you (see <https://vnps.org/vnps-news-updates/>).

During one of the field trips the group split up, and Caitie and I followed different leaders. I followed Chris Ludwig and Stephen Grayson, Southwest Region steward, as our small botanical group sought the Wild Hyacinth, *Camassia scilloides*, in bloom. We found them to be teeming with insect life. On the same hillside we also observed splendid displays of Fire Pink (*Silene virginica*), Dwarf Larkspur (*Delphinium tricorne*), and Green Violet (*Hybanthus concolor*). In addition to the field trips, Heritage had arranged for presentations about the unique aspects of The Cedars, and we had a chance to meet members of its friends group.

In this issue, Bob Pickett writes about the VNPS field trip to the Balsam Mountains in June led by Gary Fleming and Mary Jane Epps and coordinated by Sally Anderson. I roomed with Pocahontas Chapter president Leslie Allanson, an intrepid seeker of flowers who has no qualms about stopping on the side of a highway to investigate a bloom. What great eyes she has for spotting interesting plants! With a nightly base at a hotel in Abingdon, our group carpoled to Whitetop Mountain, the Mount Rogers National Recreation Area, and

Grayson Highlands State Park for a week of floral adventures. We saw a number of rare plants and showy wildflowers. My highlights included the stunning displays of Flame Azalea (*Rhododendron calendulaceum*), Small Purple Fringed Orchid (*Platanthera psycodes*), and the globally rare Roan Mountain Bluets (*Houstonia montana*). We also had a magically misty morning walk along a section of the Appalachian Trail. My remarkable cell-phone camera was on overdrive during the entire trip.

Now it's your opportunity to participate in some field trips! The John Clayton Chapter has assembled a variety of outings for our annual meeting as well as lectures and discussions. And if you're inspired by the plants, perhaps you'll be inspired to take a leadership role in your chapter or at the state level. It takes a number of volunteers to manage the organization and offer these events to our members. I hope to see you in Williamsburg next month! ❖



Teamwork on a plant identification with Tana Herndon, Mary Jane Epps, Sally Anderson, Gary Fleming (back), Dwight Johnson, and Karen Sheffield. (Nancy Vehrs photos)



Field trip participants might choose to visit an area cypress swamp. (John Clayton Chapter photo)

Annual Meeting Field Trip List

- Blackwater Ecological Preserve
- Butterflies of Williamsburg
- Dragon Run
- Downtown Williamsburg
- Grafton Ponds
- Local Ferns and Mosses
- New Kent Forestry Center
- White Oak Trail, Newport News Park
- Tidal (Fresh and Saltwater) Marshes, Colonial Parkway
- Virginia Living Museum
- Wahrani Nature Park
- William & Mary Campus Woody Species
- William & Mary College Woods
- William & Mary Herbarium and Greenhouse

Support VNPS, get a tax break

Those of us who attended the Cedars field trip sponsored by the Virginia Department of Conservation and Recreation saw firsthand what our benevolence can do. By partnering with The Nature Conservancy, the Virginia Native Plant Society raised funds to assist DCR in purchasing parcels of land for inclusion in The Cedars Natural Area Preserve, a biological hot spot, so labeled for its wide variety of species, both flora and fauna, many endangered or with a very small range that includes The Cedars.

If you are of a certain age (70 years and 6 months or more) and needing to take a required minimum distribution (RMD) from

your retirement vehicle (401K or traditional IRA), any funds that you designate to be directly donated to VNPS will be distributed tax free! This is about the only way most of us can get a tax reduction for our charitable giving, so we might as well use it and do some good. Designating that the funds go directly to VNPS relieves you of the burden of proof. You just need to ask your fund manager to send the amount or percentage you desire to VNPS. If you need the tax ID for VNPS, you can get it from the state headquarters at Blandy Experimental Farm. The maximum you can withdraw in this way per year is \$100,000.

Of course, anyone can make a donation at any time. You can raise your level of membership or send a donation to celebrate a milestone in your life (such as finally getting some trilliums to survive the winter and bloom). You don't need to wait for RMD times.

Our projects have included protecting and restoring sensitive wilderness areas and providing grant money for research at several Virginia colleges and universities. All have been most appreciated. "There ain't much money in botany these days," and we are in a position to address that issue!

—Peggy Troyer, VNPS Fundraising Chair and Kathleen Stasulis, VNPS Treasurer

Longleaf Pines protect rare plants and habitats

Fire-maintained Longleaf Pine communities (flatwoods, woodlands, savannas) once occupied over a million acres in southeast Virginia, forming the northern range limit of this keystone species and its associated plant communities. Forests containing Longleaf (*Pinus palustris*) historically extended across over 90 million acres from Virginia south to Florida and west to Texas. By the mid-1800s, Longleaf was virtually extirpated from the state and by the end of the 20th century only about 200 mature individual Longleaf Pines remained in Virginia. Unlike Loblolly Pine, Longleaf is not a pioneer species and won't naturally regenerate across its former habitat—especially in the absence of frequent fire. With no nearby Longleaf seed sources, even on frequently burned sites, Longleaf cannot re-establish itself. Thus, there is only one way to get Longleaf Pine back on a site, and that is by planting it.

Why Longleaf Pine? Why can't the currently ubiquitous upland pine of southeast Virginia, Loblolly Pine, suffice as a surrogate for Longleaf within a natural areas restoration context? The reason is that historically, Loblolly pine was mostly absent across the uplands of the southeastern U.S. It was restricted to lower, wetter landscape positions such as stream bottoms, swamp hummocks and other wetlands (pocosins; seepage



The state-rare *Platanthera blephariglottis* (Small White Fringed Orchid) is found at South Quay Sandhills Natural Area Preserve. (Gary Fleming photo)



From Your Natural Heritage Program

By Chris Ludwig and Rick Myers



bogs)—locations where fire occurred rarely, infrequently or at low intensity. Loblolly Pine is killed by fire in its seedling and young sapling stages. Historic fires, sweeping across the uplands every one to three years, would have kept Loblolly from regenerating or living long enough to reach fire-resistant size. In contrast, with its fire-resistant seedling grass stage, Longleaf Pines survive and thrive under a frequent fire regime in all of its life stages. It is the only southern yellow pine whose seedling stage survives fire.

The DCR-Natural Heritage focus is not just on the tree; but more about the diverse assemblage of plants and animals that are associated with frequently burned Longleaf Pine communities. A remarkable 23 percent of ALL the rare (S1–S2S3) plants in Virginia are found in burned pine savanna habitats in the southeastern part of the state. Put another way, by restoring Longleaf Pine and applying frequent prescribed fire on southeastern natural area preserves, we are improving habitat for 144 of the 628 rare vascular plants that we track. That's a pretty good reason to restore Longleaf Pine on former farm fields and Loblolly Pine stands. Unlike most other species of southern pine, Longleaf withstands or benefits from the effects of fire in all of its life stages, from one-year old seedlings to old-age (up to 400 years) mature trees. Once established, Longleaf communities are self-regenerative, so long as a fire regime is maintained.

For these reasons, DCR's Natural Heritage Program is investing heavily in Longleaf Pine restoration on Southeast Region state natural area preserves. The objective is to re-establish Longleaf Pine as the dominant tree species of various fire-maintained communities, by planting it and applying prescribed fire. Many fire-dependent rare plants and animals will emerge from the seedbank and colonize these forests, benefitting from the open, sunny habitat conditions created by a frequent fire regime. For restoration efforts, Natural Heritage exclusively uses Longleaf Pine seedlings grown from seed collected from the few remaining mature native Virginia seed trees, almost all of which are located at South Quay Sandhills Natural Area Preserve near Franklin, Va. One-year-old container-grown seedlings are planted at a density of about 500 per acre following a prescribed burn that prepares the site by setting back competing vegetation and reducing fuel loads. Another burn is conducted after the second growing season, again to control competition and prevent excessive fuel accumulation. Once seedlings are established, the goal is to burn every two to three years afterward...forever.

DCR's first Longleaf Pine restoration planting was in February 2008, when 40,000 seedlings were established in an 80-acre old field at Chub Sandhill Natural Area Preserve in Sussex County. Now 10 years into this work, Natural Heritage has re-introduced Longleaf Pine to 1,332 acres at six preserves in southeastern Virginia, with over 675,000 seedlings planted. South Quay Sandhills NAP has the most area of Longleaf established (600 acres) as of December 2017. ❖

Save the Date: March 25-29, 2019

Head to Texas Hill Country with VNPS

Venture with the Virginia Native Plant Society to the Texas Hill Country from March 25-29, 2019, in search of Bluebonnets and other Texas wildflowers. We'll visit three iconic cities—Austin, Fredericksburg and San Antonio—and explore diverse landscapes along the way.

On Monday, March 25, we will fly to Austin, Texas, stay at Aloft Austin Downtown Hotel, enjoy a group dinner, and walk to Congress Street Bridge to watch bats emerge.

The next day we will take a guided tour at Lady Bird Johnson Wildflower Center in the morning—learning about the plants we are likely to see during our visit to Texas. Then, en route to Fredericksburg, we will stop and explore the canyon, cave, and grotto at the West Cave Outdoor Discovery Center. We will also visit wineries and the Wild Seed Farm along the way. That night will be spent at the Peach Tree Inn in Fredericksburg.

On Wednesday, we will join a docent from the local native plant society to tour the Fredericksburg

Nature Center, where trails meander through diverse habitats with many species of forbs, woody plants, and grasses. We will then visit the Kerrville Riverside Park, which has an interpretive center and paved trails along river and bluff, good for birding. The two-acre garden/arboretum includes more than 100 species of native trees and shrubs plus 200+ species of wildflowers, grasses, and ferns. We will return to the inn in time for a late lunch and then choose among several afternoon excursions that might include Enchanted Rock Dome, Museum of the Pacific War or the LBJ Ranch.

On Thursday we move on to Friedrich Wilderness Park—home for rare birds, terrestrial orchids, steep hills, and deep canyons. The park is internationally known for bird watching. After lunch at the Sea Island Shrimp House, a San Antonio classic, we head to Medina River Natural Area, a 500-acre landscape that showcases a rich pecan and bald cypress trees habitat with cactus and honey mesquite that dot the upland trails. We then



Texas Bluebonnet (*Lupinus texensis*), state flower of Texas. (Lady Bird Johnson Wildflower Center photos)

return to San Antonio proper to the historic Menger Hotel near the Alamo. That evening participants will be on their own to explore the River Walk and San Antonio.

On the last day we will visit the San Antonio Botanic Garden, named “one of The South’s Best Botanical Gardens” by *Southern Living* in March 2017. Walk through native plant gardens representing three different ecosystems—East Texas Pineywoods, Hill Country, and South Texas. On the way to the airport we will stop for lunch at another San Antonio icon, Tomatillos Cafe and Cantina, before flying home.

The Texas trip is limited to 15 people with an approximate cost of \$500 per person double occupancy and \$950 for single occupancy. Airfare and meals are not included. More details will be coming soon, but if you are interested, contact Janet Pawlukiewicz at janetjed@gmail.com.

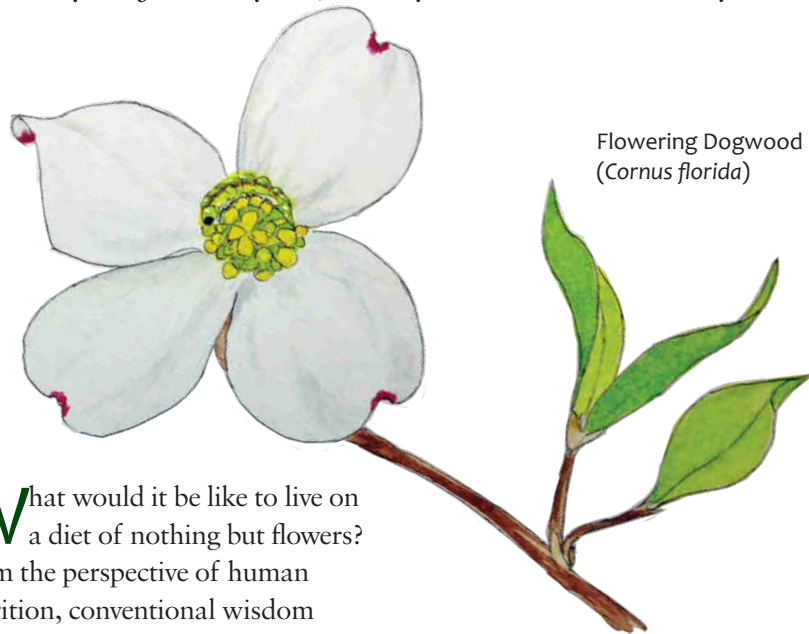
—Janet Pawlukiewicz, VNPS 1st Vice-President



Drummond's Onion (*Allium drummondii*)

Butterfly, Dogwood linked in circle of life

Article by W. John Hayden, Botany Chair. Illustrations by Nicky Staunton.



Flowering Dogwood
(*Cornus florida*)

What would it be like to live on a diet of nothing but flowers? From the perspective of human nutrition, conventional wisdom suggests that it would be difficult to obtain a well-balanced diet from flowers alone. We do, however, have the legend of the lotus-eaters, people encountered by Odysseus and his crew on their epic return journey from Troy. As recounted in the *Odyssey*, lotus-eaters lived life in a perpetual stupor, and the two crew members who sampled lotus flowers immediately lost all interest in returning to their homes in Ithaca. Upon seeing the danger of consuming these flowers—the botanical identity of which is the subject of some debate—Odysseus hastily departed the strange land of lotus-eaters. That story, of course, is legend, and I doubt that there have been any successful human cultures that have subsisted entirely on flowers.

But insects are another story. In particular, many butterflies in the genus *Celastrina*, known as blues or azures, truly do live on a diet of flowers. In many *Celastrina* species, female blues lay their eggs directly on flower buds, the caterpillars consume buds and open flowers, and the short-lived adult butterflies

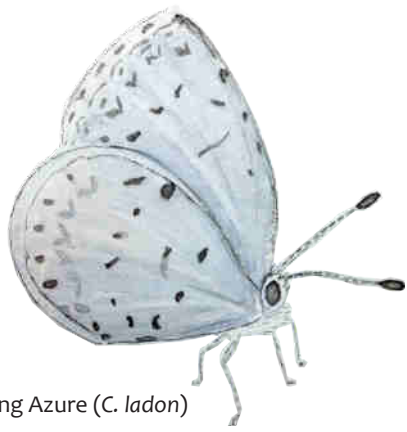
sip nectar from flowers of diverse plants. Further, some of the blues are highly selective in their choice of larval food flowers. As described recently, the Appalachian Azure (*C. neglecta-major*) specializes on flowers of Common Black Cohosh (*Actaea racemosa*) (Staunton 2015; Hayden 2017). Similarly, the Spring Sooty Azure (*C. nigra*), a.k.a. the Dusty Azure, specializes on the flowers of Goat's-beard (*Aruncus dioicus*). And our 2018 Wildflower of the Year, Flowering Dogwood, has its own specialist, the Spring Azure (*C. ladon*).

Actually, the situation with Spring Azures is somewhat complicated. Lepidopterists recognize two subspecies of Spring Azures. The northern subspecies (*C. ladon* ssp. *lucia*) occurs from the Canadian subarctic to southern New Jersey and a few high-elevation locations in Virginia and West Virginia; they are specialists on the flowers of the Highbush Blueberry (*Vaccinium corymbosum*). The southern subspecies (*C. ladon* ssp. *ladon*), the Flowering Dogwood specialist, is

found from (roughly) mid-Ohio and mid-Pennsylvania south, but is found only somewhat sparsely in the coastal plain of the mid-Atlantic states (Wright & Pavulaan 1999).

Promoting native plants for the benefit of butterflies has the inevitable downside that caterpillars eat their host plants. You can't really have butterflies without accepting some loss (and sometimes considerable loss) of plant tissue. In the case of Spring Azures and Flowering Dogwoods, however, the downside of this unavoidable trade-off is relatively minor. The showy parts of Flowering Dogwood in bloom are leaf-like bracts, which are not particularly nutritious. Little damage from caterpillars is found on the bracts. Rather, the caterpillars consume the small yellow flowers that are tightly packed in the spaces within each group of four bracts. Consequently, damage from Spring Azure caterpillar herbivory is not easily noticed without careful, closeup inspection. The advantage for the insect is clear: pollen-containing anthers provide protein, nectar—produced because it entices pollinators—yields carbohydrates, and the succulent cells of floral tissue include at least a modicum of minerals, lipids, and nucleic acids. In general, floral organs, especially anthers and ovaries, are highly nutritious, providing much more food value than leaves or floral bracts. In this case, appreciative naturalists can have their pretty dogwoods and cute little azure butterflies too.

Evidently, the small yellow dogwood flowers provide an abundance of sugary molecules (carbohydrates). Not only do sugars

Spring Azure (*C. ladon*)

from dogwood flowers satisfy the caterpillar's metabolic needs, they also enable Spring Azure caterpillars to secrete sugary droplets that are fed upon by ants. In return, the ants protect the caterpillars from potential predators. (The same mutualistic relationship occurs between ants

and Appalachian Azure caterpillars feeding on Black Cohosh; ditto for several other species of *Celastrina*.) Of course, active feeding by Spring Azure caterpillars is limited to the relatively brief time that Flowering Dogwoods are in bloom. Nevertheless, in this brief period, the caterpillars manage to accumulate sufficient food to feed the ubiquitous and protective ants, grow to a size appropriate for pupation, and store enough food for the dormant pupa to survive until the following spring when it emerges as an adult Spring Azure butterfly. There really is no other food source; from egg to the emergence of adults, Spring Azures are wholly fueled by Flowering Dogwoods.

Beware the Giant Hogweed

In June, the invasive and harmful plant Giant Hogweed (*Heracleum mantegazzianum*) was confirmed on one site in Clarke County, Virginia.

Giant Hogweed is a large perennial herb in the carrot and parsnip family, typically six to nine feet (occasionally to 15 feet) tall. The stem is hollow, two to four inches in diameter, with dark reddish-purple spots and bristles. The leaves are deeply incised and may grow to a width of up to five feet. Flowers are white and clustered into a large, compound umbel up to two-and-a-half feet wide.

This federally-listed noxious



Giant Hogweed leaf (USDA photos)

weed is invasive and non-native and poses a serious human health hazard because it exudes a clear watery sap containing photosensitizing agents. Skin contact with the sap, combined with exposure to sunlight, can cause severe burns, blistering, and blindness.

Giant Hogweed also poses ecological impacts by forming tall, dense, and deeply shaded stands that inhibit growth of native species. Soil surfaces under the plant become bare and erode in the winter months.

Giant Hogweed is native to the western Caucasus Mountain range and has been introduced in places all over the world, often by collectors working for botanical gardens. As an escape it is now found in the Pacific Northwest and in many northeastern states.

When removing the plant, avoid skin exposure by wearing protective gear—coveralls, rubber gloves, eye protection, etc. Do not mow or mechanically cut the plant because that creates exposure to sap.

When you think about it, little Spring Azure butterflies flitting in the springtime sun are, literally, bits of Flowering Dogwood molecules, reconfigured by biochemistry into the body of a butterfly—just another of the many everyday miracles of life on planet Earth that we are privileged to observe and, in this case at least, understand. ❖

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Giant Hogweed flower

Glyphosate-based herbicides provide control of Giant Hogweed.

In Virginia, several other plant species may be mistaken for Giant Hogweed including Cow Parsnip (*Heracleum maximum*), Angelica (*Angelica venenosa*), Poison Hemlock (*Conium maculatum*), and Common Elderberry (*Sambucus canadensis*).

Report Hogweed sightings to <http://www.invasivespecies.org/report-sightings>.

Flowering Dogwood survives exotic attack

Article and illustration by W. John Hayden, Botany Chair

It has been said that loss of native biodiversity from the effects of invasive exotic species is second only to that caused by outright habitat destruction. In the world of plants, some of the worst offenders are exotic species that actively invade intact natural habitats and, by their aggressive tendencies, crowd out native species. Attack by lianas (woody climbing plants) such as Japanese Honeysuckle (*Lonicera japonica*) and Oriental Bittersweet (*Celastrus orbiculatus*) can include effects similar to strangulation, brought on by twining around their host plant's stems. It is not always the host, however, for which the outcome is negative in these life-or-death struggles between native tree and exotic liana. The Flowering Dogwood stem illustrated here (Figure 1) shows an example in which Japanese Honeysuckle lost the battle. The small helixlike stems below and above the middle of the photograph are from a dead honeysuckle (labelled H), and the larger, branched, stems are dogwood. Above both of the coiling honeysuckle stem segments, profuse overgrowth of dogwood is evident, especially in the upper example.

Here is my interpretation of the dynamics that played out here. A young Japanese Honeysuckle stem grew quickly up this small dogwood trunk, forming a left-handed helix pressed closely to the dogwood bark. Soon, the honeysuckle stem began to undergo secondary growth, i.e., its cambium began to make new xylem and phloem cells, causing the honeysuckle stem to become thicker and, in effect, tightening its grip on the dogwood. The constriction got only tighter, because the dogwood, too,

has a cambium, which also makes its bark thicker. At some point, as the two stems tightened their grip on each other, the honeysuckle began to disrupt cambial growth and, consequently, normal physiological processes in the dogwood stem. This could have been the beginning of the end for the dogwood.

Any healthy photosynthetic plant must continuously transport some of the sugar made by photosynthesis in its leafy canopy down to the roots in order to keep its root cells alive—but the tightly wrapped honeysuckle stem had limited the dogwood's ability to make the phloem cells required for this downward flow of sugars. Consequently, sugars built up in the unrestricted dogwood phloem directly above the constricting honeysuckle stem. This excess sugar stimulated even more growth by the cambium—so much growth, in fact, that dogwood tissues completely overgrew the honeysuckle stem in the two places illustrated. Simply put, in this case, the dogwood grew faster and won. Of course, too often, it goes the other way, and the Japanese Honeysuckle (or Oriental Bittersweet) kills the native plant (dogwoods included) upon which it grows because the constricted host stem can no longer keep its root cells alive. There is, nevertheless, a certain satisfaction in noting this one particular case in which the native plant came out ahead. ❖

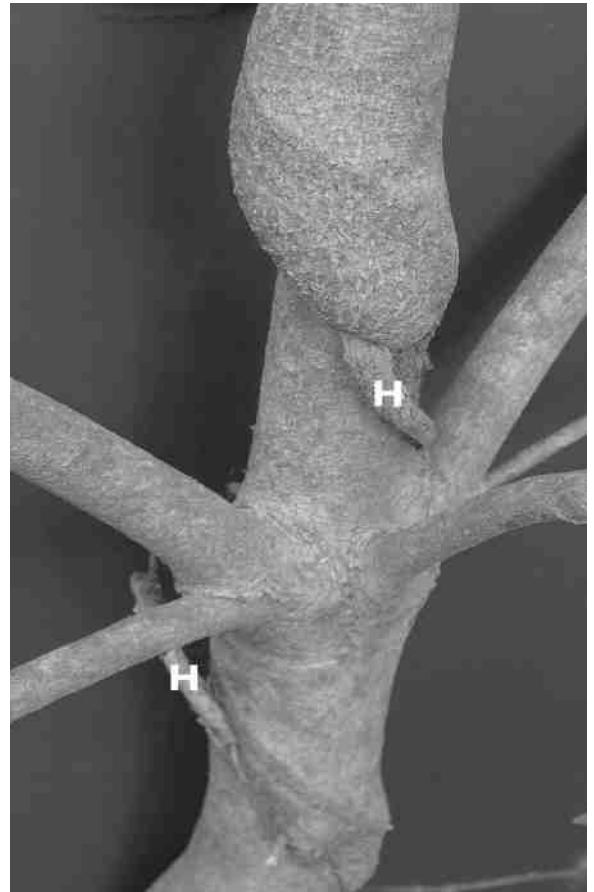


Figure 1. Branched Flowering Dogwood stem (*Cornus florida*) that survived constrictive effects of a twining Japanese Honeysuckle (*Lonicera japonica*) liana (H).



VIRGINIA NATIVE PLANT SOCIETY

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Next submission deadline: Oct. 1, 2018

Use Flora App to plan your native garden

Did you know you could use the Flora of Virginia Mobile App to pick plants that suit your yard, garden, or other site? It's a little trick you can do using the App's Graphic Key. Let's assume you want a red native dicot to brighten up a special spot in July—but not a composite. Let's make a list of plants that might work.

Run the App. Then tap GRAPHIC KEY, then SKIP. You're sent to the bare-bones screen of the Graphic Key, with no selections made, and unless your device's GPS is picking up on your location, you'll see 3,164 species "found," that is, all the species in the App (for now!).

Pick the major group that contains the type of plant you want, in this case DICOT, OTHER. (If you aren't up on the 11 major groups, brush up by backing out and, instead of SKIP, tap BEGIN, and you'll get some information about what's in each group. Learning these groups is a good goal.) Tap the icon for DICOT, OTHER, which drops the number found to 1,242.

Location. Now let's get site-specific. If you're at home and want this plant for your yard, tap the box beside USE CURRENT LOCATION. But if you're thinking of your vacation house across the state, TAP TO SELECT that county from a list. The number found drops again. For MECKLENBURG COUNTY, it drops to 943.

Habitat and plant characteristics Next, think of where you want to put your plant. You need to find species



With the help of the Flora App, you can find the right natives for your garden such as these three: Cardinal Flower (*Lobelia cardinalis*), Fire Pink (*Silene virginica*) and Scarlet Beebalm (*Monarda didyma*). (VNPS photo)

that like the habitat you're offering. So make a choice for MOISTURE REGIME and LIGHT REGIME. Under FLOWERING PERIOD, tap JULY. Go down and tap the RED icon for flower color. In Mecklenburg, a moist spot in part shade, I'm down to 27 species, so I tap SHOW and look at the thumbnails. I hone in on Fire Pink (*Silene virginica*), Cardinal Flower (*Lobelia cardinalis*), and Scarlet Beebalm (*Monarda didyma*), which strike my fancy.

You may want some shrubs, a few composites, maybe some orchids, different colored flowers. Repeat this process in different major groups. To make a list of species from different groups, for each species tap the thumbnail to open the description, then tap the star in the

upper left. It turns gold, indicating that it's been added to your list of Favorites. Review your list by tapping FAVORITES on the BROWSE screen, off the HOME page.

You were probably tempted by the pretty Field Poppy (*Papaver dubium*) but learned it was a nonnative. We soon will add a button to the Graphic Key: DISPLAY NATIVES ONLY. This will help you weed out your list.

More nurseries are carrying more natives, and the Virginia Native Plant Society publishes a list of native-plant nurseries on its site: <http://vnps.org/conservation/plant-nurseries/> This leaves only the legwork and the planting!

—Bland Crowder, executive director, Flora of Virginia Project

About the Flora of Virginia App

The App is a modern powerhouse for anyone who needs or wants to learn about Virginia plants, and more than one thousand of you are already using it.

The App works indoors or outdoors. *No internet connection is needed to use the App.* Everything—from the descriptions

to the photos to the range maps—is resident on your device. To download the App or to get an update, however, find a solid wifi connection. It's a lot of data, but it takes only a couple of minutes on a good connection. You wouldn't want to use a data link or a personal hotspot for this.

To purchase your Flora of Virginia App, go to <https://floraofvirginia.org/>.

Botanizing the Balsam Mountains of SW Va.

For seven days in early June, 18 people were fortunate enough to join Gary Fleming, vegetation ecologist with the Virginia Natural Heritage Program, and Mary Jane Epps, assistant professor of biology at Mary Baldwin University in Staunton, for a week of botanizing in the Balsam Mountains of southwest Virginia. We



Bold botanists pose for a group photo at Haw Orchard Mountain in Grayson Highlands State Park, the spruce forest on Whitetop. (Gary Fleming photo)

explored communities of red spruce forests, northern hardwood forests, balds, and bogs. All hikes were in the Mount Rogers National Recreation Area or Grayson Highlands State Park.

The first thing I learned was what constitutes the Balsam Mountains. They are the northern extension of the high Southern Blue Ridge Province into southwestern Virginia. Due to its highly resistant metamorphic rock (mostly rhyolite), the Balsams include the two tallest and most massive peaks in the state (Mount Rogers, 5,729 feet, and Whitetop Mountain, 5,094 feet). Numerous plant species found in the Balsam Mountains are endemic to the southern Appalachians.

The second thing I learned was that there are no Balsam Firs (*Abies balsamea*) in the Balsam Mountains of Virginia. This northern Appalachian species reaches its southernmost limits in Shenandoah National Park in Virginia and four localities in West Virginia. Mount Rogers supports the northernmost occurrence of the southern Fraser Fir (*Abies fraseri*). There are no other known sites in Virginia or West Virginia.

Both species of fir are often co-

dominant with Red Spruce (*Picea rubens*). These southern Appalachian red spruce–fir forests are restricted to seven high-elevation mountainous areas between Mount Rogers and Great Smoky Mountains National Park. Today, stands of Red Spruce (with or without firs) exist at fewer than 20 sites in Virginia, and at only two of these (Mount Rogers and Whitetop) is the species relatively abundant.

The Balsam Mountains are typified by cool wet summers and somewhat drier winters. Average annual precipitation at the summit of Mount Rogers is 66.9 inches. The average high temperature in July and August is 71°F, and the average high temperature in January is 29°F [from the National Oceanic and Atmospheric Administration]. Soils are organic rich, high in calcium and magnesium, and tend to be very acidic (pH = 3.2–5.1), particularly at the higher elevations (pH = 3.2–3.7).

Working with partners throughout the eastern United States, the Virginia Natural Heritage Program has classified more than 300 natural community types in Virginia, complete with global (G) and state (S)

rarity ranks. Mount Rogers supports the Fraser Fir Forest community, ranked G1/S1, the most critically imperiled rankings. While the nine-mile hike to the summit of Mount Rogers seemed overambitious for our group (Gary likened us to a herd of cats), we did do several hikes through Red Spruce Forest communities

of Whitetop Mountain and Grayson Highlands. There is little understory in these spruce forests, and the herbaceous flora consists largely of Mountain Wood Fern (*Dryopteris campyloptera*), Shining Clubmoss (*Huperzia lucidula*), and Mountain Wood-sorrel (*Oxalis montana*). In the northern hardwood forests, Yellow Birch (*Betula alleghaniensis*), Sugar Maple (*Acer saccharum*), Yellow Buckeye (*Aesculus flava*) and American Beech (*Fagus grandifolia*) were codominant. Their understory contains Mountain Maple (*Acer spicatum*) and Fraser Magnolia (*Magnolia fraseri*). The shrub layer may be dominated by deciduous plants, such as Hobblebush (*Viburnum lantanoides*), Southern Mountain Cranberry (*Vaccinium erythrocarpum*), Smooth Blackberry (*Rubus canadensis*), and Skunk Currant (*Ribes glandulosum*), or by evergreen Rhododendrons, like Great Laurel (*Rhododendron maximum*) and Pink Laurel (*R. catawbiense*). Herbaceous vegetation in these high-elevation mesophytic hardwood communities is extremely well developed and lush. It consists primarily of ferns and Appalachian

White Snakeroot (*Ageratina altissima* var. *roanensis*), along with such species as Blue-bead Lily (*Clintonia borealis*) and Canada Mayflower (*Maianthemum canadense*). We even found American Lily-of-the-valley (*Convallaria pseudomajalis*)! Appalachian Woodland Sedge (*Carex lucorum* var. *austrolocorum*) is abundant in the drier northern hardwood forests we visited.

I was impressed by the bryophyte communities of mosses and liverworts, which tended to festoon the rocks, soil, and tree trunks. The liverwort genus *Bazzania* is a particularly dominant groundcover in the spruce forests, with one common species and three others that are endemic to these high-elevation forests. Lung Lichen (*Lobaria pulmonaria*), in the lichen family Lobariaceae (Kingdom Fungi), is frequently present on spruce trunks.

These mosses and liverworts that carpet much of the trails provide a home for a number of salamanders. Mary Jane and Karen Sheffield worked diligently throughout the week searching for salamanders and were able to find and identify the Northern Pygmy Salamander (*Desmognathus organi*) and Weller's Salamander (*Plethodon welleri*), both limited in Virginia to the three-county region of the Balsams. By far the most common salamander found was the Northern Gray-cheeked Salamander (*Plethodon montanus*), which is found only in the seven-county region surrounding the Balsams.

In April 2016 VNPS had a trip to some of the same sites we visited this year. One was Dave's Branch Cove, the epitome of a southern Appalachian high-elevation rich cove forest (G3/S2). I envy the 2016 participants for their visit to this site at the peak of the spring ephemeral bloom period. I could just imagine

seeing the hillside in riotous colors. Visiting six weeks later, we were still awed by the foliage plus the beauty of the blooming Tassel-rue (*Trautvetteria caroliniensis*), Small Purple Fringed Orchid (*Platanthera psychodes*), and a few buds of the White Monkshood (*Aconitum reclinatum*).

A theme that dogged us throughout the week was the difficulty of identifying true species versus hybrids. Discussions ensued regarding Northern Highbush Blueberry (*Vaccinium corymbosum*) vs. Mountain Highbush Blueberry (*V. simulatum*) and Gray's Lily (*Lilium grayi*) vs. the Canada Lily (*L. canadense*). I suspect Dwight and Gary are still trading e-mails arguing the traits of Hickey's Tree-clubmoss (*Dendrolycopodium hickeyi*) vs. those of the Common Tree-clubmoss (*D. obscurum*).

Highlights of the week for me? Seeing my first Mountain Fetterbush (*Eubotrys recurvus*, formerly *Leucothoe recurva*) was certainly one of them. The Umbrella-leaf (*Diphylleia cymosa*), seen at several sites on the trip, was most impressive with its two large, sinuous-edged leaves. The heath balds provided brilliant orange displays of Flame Azalea (*Rhododendron calendulaceum*). Gary assured us that we'd be tired of them before the hike was over, but I did notice even he took a few photos.

Cabin Creek trail was certainly a highlight, based on our finding five orchids (foliage, flower, or in bud); *Goodyera pubescens*, *Cypripedium acaule*, *Platanthera psychodes*, *Platanthera lacera*, and *Listera smallii*.

I would be greatly remiss if I didn't acknowledge the Roan Mountain Bluets (*Houstonia montana*). In 2013, Gary Fleming and his colleague, Karen Patterson,



Among the several lily species and hybrids found was this one, probably Gray's Lily (*Lilium grayi*). (Bob Pickett photo)

discovered this; the first Virginia population, establishing a new northern range limit. This is a federally listed endangered species that has only eight other known populations, all in North Carolina. The trip's success was also made possible by Carrie Blair. A tip of the hat and thanks to her for access to her detailed inventory and field notes.

My most memorable event of the trip? It was certainly the last afternoon, when we ambled out onto a southern Appalachian grassy bald (G1/S1) below Whitetop. Under a blue sky, the views of countless mountain ranges were outstanding, bringing us all to want to sing from *The Sound of Music*. Fittingly, Gary walked to the rock cliff's edge, viewed the Flame Azaleas and expansive views and shouted with a spirited declaration of joy that we all shared.


—Bob Pickett, Potowmack Chapter, was supervisor of the gardeners and greenhouses at the U.S. Naval Academy for 20 years and has led monthly natural history hikes for 30 years with the Appalachian Trail Club.

Fun on Facebook: Ferns, Fungi, Mosses, and Lichens



Facebook devotees already know that our Society has a page with more than 14,000 followers that is administered by Caitie Cyrus. We also have a Facebook group, administered by Marty Nielsen, which allows for exchanges among members. It is a popular site for plant identification. Now we've added another group page: "VNPS Ferns, Fungi, Lichens, and Mosses." Helen Hamilton of the John Clayton was interested in developing an exchange of knowledge about non-vascular plants. There are other groups devoted to this subject, but they go far afield. Helen and I wanted to create something local to Virginia. The new group is open to members only by request. You need not be an expert to join, but those of you with an interest in bryophytes may find this group to your liking. Check us out and have fun. —Nancy Vehrs, VNPS President



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